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Lelito Environmental Consultants

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**Massachusetts Bay Transportation
Authority Rapid Transit System:**

VEGETATION MANAGEMENT PLAN

**Pursuant to the Massachusetts Rights
of Way Management Regulations**



Prepared for:

Massachusetts Bay Transportation Authority
500 Arborway
Boston, Massachusetts 02130

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Authority Rapid Transit System:**

VEGETATION MANAGEMENT PLAN

**Pursuant to the Massachusetts Rights
of Way Management Regulations**

(333 CMR 11.00 et seq.)

September 1, 1993

Prepared by:

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Wildlife Biologists
Wetland Scientists
Complete Environmental Permitting Process

September 1, 1993

Department of Food and Agriculture
Division of Regulatory Services, Pesticide Bureau
Leverett Saltonstall Building, Government Center
100 Cambridge Street
Boston, Massachusetts 02202

RE: MBTA VMP: PROPOSED MODIFICATIONS

[LEC File #1837.01]

Proposed modifications to the VMP include:

Article 4: Identification of Target Vegetation & Justification ...

The introduction to this section refers to vegetation as "desirable" or "undesirable" dependant upon it's location within the ROW.

Specifically, Access Points (Article 4.1.2.1) to the ROW have been addressed as well as increased emphasis on the treatment of Drainage Ditches (Article 4.1.2.3).

Article 6.2.4: Endangered or Threatened Species

The occurrence of endangered or threatened species habitat within the ROW has been addressed.

Article 7: Marking System Used to Identify Sensitive Areas

Each Ballasted Area and Area Adjacent to the Ballast will be marked accordingly prior to herbicide applications in the same. This proposed change is subsequent to the width and presence of multiple tracks (Ballasted Areas) within the ROW.

LEC is pleased to provide you with this summary of "new information" and the attached VMP. Please do not hesitate to contact us should you have any questions.

Sincerely,

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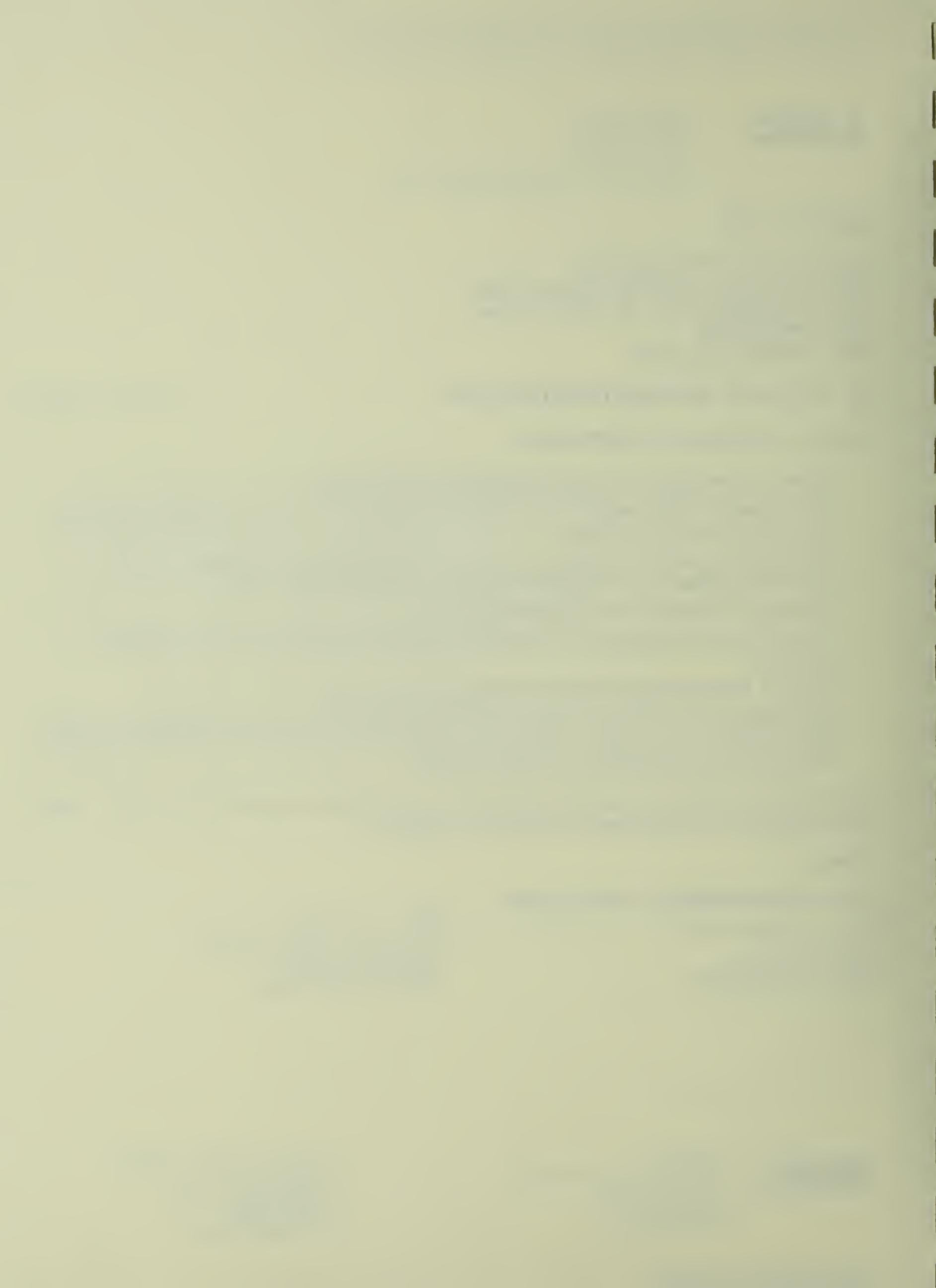


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1 INTRODUCTION

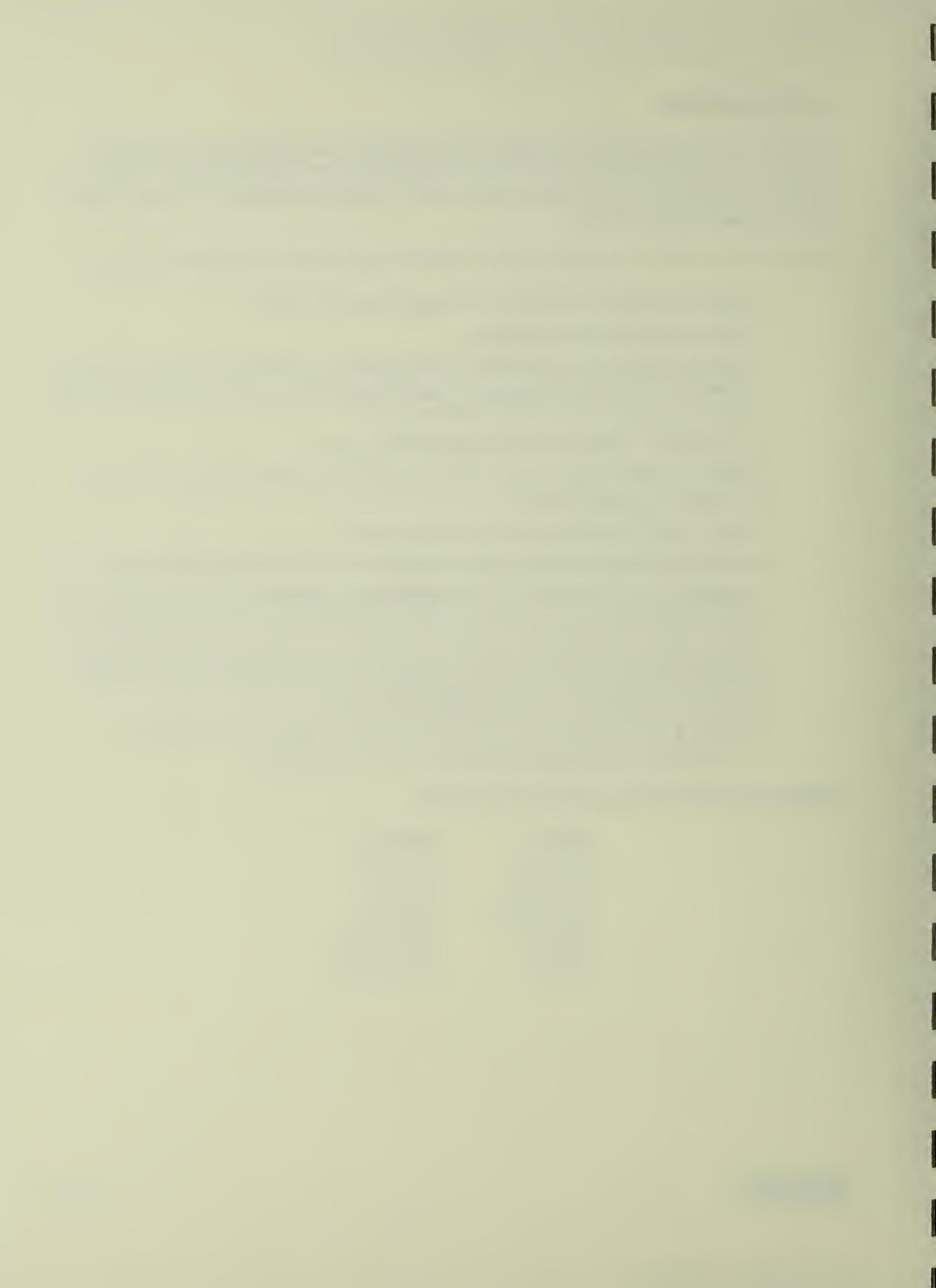
Pursuant to the Massachusetts Rights of Way Management Regulations (333 CMR 11.00), this Vegetation Management Plan (VMP) outlines the Massachusetts Bay Transportation Authority's (MBTA) 5 year program for managing vegetation on their Rapid Transit System Rights of Way.

In accordance with the aforementioned regulations, this VMP includes the following:

- A general statement of goals and objectives of the VMP.
- Identification of target vegetation.
- Intended methods of vegetation management and rationale for use, including vegetation control techniques proposed, equipment, proposed timing of applications and alternative control procedures.
- A justification of herbicide applications proposed.
- Methods, references and sources for identifying sensitive areas and control strategies proposed therein.
- Operational guidelines for herbicide applicators.
- Identification and qualifications of individuals developing and submitting a plan.
- A description of Integrated Pest Management Programs or other techniques/programs to minimize the amount and frequency of herbicide application.
- A description of alternative land use provisions or agreements that may be established with individuals, state, federal or municipal agencies to minimize the need for herbicide, including the rationale for accepting or denying any reasonable request made by any individual.
- A remedial plan to address spills and related accidents.

2 MUNICIPALITIES INCLUDED IN THE VMP

Boston	Medford
Braintree	Newton
Brookline	Quincy
Cambridge	Revere
Everett	Somerville
Malden	Watertown



3 GOALS AND OBJECTIVES

The intent of this 5 year VMP is to propose a plan that meets the MBTA's standards for the public and it's employees safety, as well as it's preventative maintenance program while simultaneously compiling with the requirements of 333 CMR 11.00 in the most practical and economical manner. It will also serve as a guide, of the MBTA's policies regarding vegetation management, to the state and municipal agencies included in this VMP. This VMP documents the methods and procedures to be used in vegetation management within the MBTA's ROWs and Yard Areas. It also addresses the measures undertaken to protect sensitive areas.

The specific objectives of the VMP are:

1. To insure the safe operation of the MBTA's Rapid Transit System.
2. To control nuisance vegetation thereby insuring the proper functioning of railroad equipment as well as the safety of MBTA personnel and the public.
3. To comply with 333 CMR 11.00, Rights of Way Management Regulations.
4. To comply with 49 CFR, specifically Subsection 213.37.
5. To continue positive communication with state and local municipalities as well as private individuals regarding the MBTA's vegetation management program.

MBTA will incorporate the proposed vegetation control methodology along with sound management and planning practices to meet or surpass the requirements set forth by the federal and state regulatory agencies.

4 IDENTIFICATION OF TARGET VEGETATION & JUSTIFICATION FOR HERBICIDE USE

This VMP identifies two major types of vegetation, desirable and undesirable. The area of the ROW or yard in which the vegetation is found determines the vegetation's classification. "Desirable vegetation" refers to any vegetation which does not interfere with railroad operation or safety. "Undesirable vegetation" is any vegetation which interferes with railroad operations or imposes safety hazards. Herbaceous plants, shrubs, saplings, trees, and vines may either be desirable or undesirable. Article 4.1 of this report details desirable and undesirable vegetation within the MBTA's Rapid Transit System's ROWs.

The MBTA will perform a survey, of the ballast area, areas adjacent to the ballast, and yard areas identifying locations in which desirable and undesirable vegetation exists. This survey will include species identification and location. The MBTA will then review

planned maintenance and assess it's anticipated effect on targeted vegetation. In areas where planned maintenance programs (i.e. rail and ballast maintenance) will produce positive results (control undesirable vegetation) no other control measures will be applied.

4.1 MBTA Right Of Way

4.1.1 Ballast Area

All woody and herbaceous plants germinating within the railroad ballast area are undesirable and therefore, "targeted".

The ballast is defined in the ROW Management Regulations (333 CMR 11.02) as "...the coarse gravel or crushed rock on which the ties, tracks and any switching, signalling and communication devices of a railroad are laid". With the passing of time, vegetation colonizes the railway ballast at varying rates, dependant on environmental conditions. Annual, perennial, and biennial grasses and forbs, along with shrub and tree seedlings become established.

This vegetative growth presents both a hindrance to MBTA required railway maintenance practices and a hazard to public and employee safety. Such vegetative growth obstructs the visibility of railroad signs and signals and/or prevent MBTA employees from noticing damaged, broken or improperly adjusted track. Propagating root systems within the ballast reduce drainage and increase moisture around the ties and other wooden structures, thereby encouraging decay and reducing the useful life of the structures. Furthermore, a fire hazard exists during dry periods when the vegetation may ignite from sparks emitted from the trains. Finally, plants growing near the rail may be crushed between the wheels and rails, with released water and plant sap decreasing stopping ability. Consequently, there is a need (49 CFR, subsection 213.37) for complete eradication of vegetation within the ballast area. The ballast area will be treated by chemical methods.

4.1.2 Areas Adjacent To The Ballast

Areas adjacent to the ballast include access points to the ROW and the open shoulder of the ROW. The open shoulder may include communication and power supply lines and drainage ditches.

4.1.2.1 Access Points

The majority of the MBTA ROW is enclosed by fencing or other physical barriers. Some of the access points are of sufficient size to allow vehicles to pass, others are only large enough for employee access by foot. These areas must

- be maintained clear of any vegetation which may hinder emergency or maintenance access. Growth of woody and herbaceous species may restrict, prohibit or increase the time required for emergency access and/or pose a safety hazard to maintenance personnel and equipment entering the ROW. The vegetation in these areas will be managed primarily by mechanical means. Herbicides may be used for the control of stump sprouts (Article 5.3.4) or applied as a pre-emergent (Article 5.3.2) or foliar (Article 5.3.3) treatment.

4.1.2.2 Open Shoulder, including Communication and Power Supply Lines

Targeted vegetation is that which has the potential to invade the ballasted areas and/or the overhead communication or power supply lines. Vegetation, growing in areas adjacent to the railroad ballast, will be selectively managed to promote the growth of low-growing shrub species. Primarily, targeted vegetation will be managed using non-chemical methods (Article 5.2) with herbicides applied selectively as a stump treatment (Article 5.3.4). Areas adjacent to the ballast that do not contain "targeted" vegetation will not be treated chemically or mechanically.

Poison ivy will not be controlled using mechanical means as a result of detrimental effects often associated with dermal contact. Consequently, selective herbicide applications will be used.

4.1.2.3 Drainage Ditches

Drainage ditches occur along portions of the ROW. These ditches are an integral component in the proper functioning of the ballasted area. The ditches allow for rapid transmission of water away from the ballasted portion of the ROW insuring the structural integrity of the roadbed. Saturated conditions under the roadbed would lead to a reduction in strength of the underlying surface requiring additional maintenance or leading to a train derailment. Establishment and eventual overgrowth of herbaceous and/or woody vegetation and the build-up of silt is imminent if proper maintenance practices are not initiated. This may lead to the ponding of stormwater rather than drainage.

These drainage ditches often become established with wetland indicator species and in some cases may be classified as a wetland under the Massachusetts Wetlands Protection Act, MGL Chapter 131 section 40. Regulatory jurisdiction of these drainage ditches will be evaluated according to the Massachusetts Wetland Protection Act, and/or any local bylaw of the municipality in which the ditches are located.

Accordingly, drainage ditches without a direct hydraulic connection to a wetland as determined by the regulations set forth in 310 CMR 10.00 and is not protectable under a bylaw of the municipality, will be maintained by selective application of herbicides and/or mechanical trenching equipment. Herbicide application will not occur if trenching is performed or is proposed in the most recent MBTA ROW maintenance plan. Drainage ditch maintenance will occur only when the ditch lacks any standing or flowing water.

Herbicides will not be applied to drainage ditches which fall under the jurisdiction of the Massachusetts Wetlands Protection Act or any local bylaw. Additionally, if the drainage ditch is protectable, any mechanical alteration of the ditch will conform to the Wetlands Protection Act or local bylaw regulating such drainage ditch.

4.2 Yard Areas

MBTA yard areas are used for maintenance and the transfer of railcars to other tracks. Often work is performed on track components or other trains as traffic continues on adjacent rail lines. The presence of herbaceous or woody vegetation may hinder and/or become a hazard to the employees and equipment of the MBTA. Additionally, excessive weed growth may lead to a fire hazard throughout the yard area. The presence of many vehicles powered by petroleum, storage tanks of petroleum based products and other flammable materials increase the fire hazard. Treatment of vegetation in the Yard Areas will consist of chemical and/or mechanical means and will adhere to sensitive area restrictions for the application of herbicides.

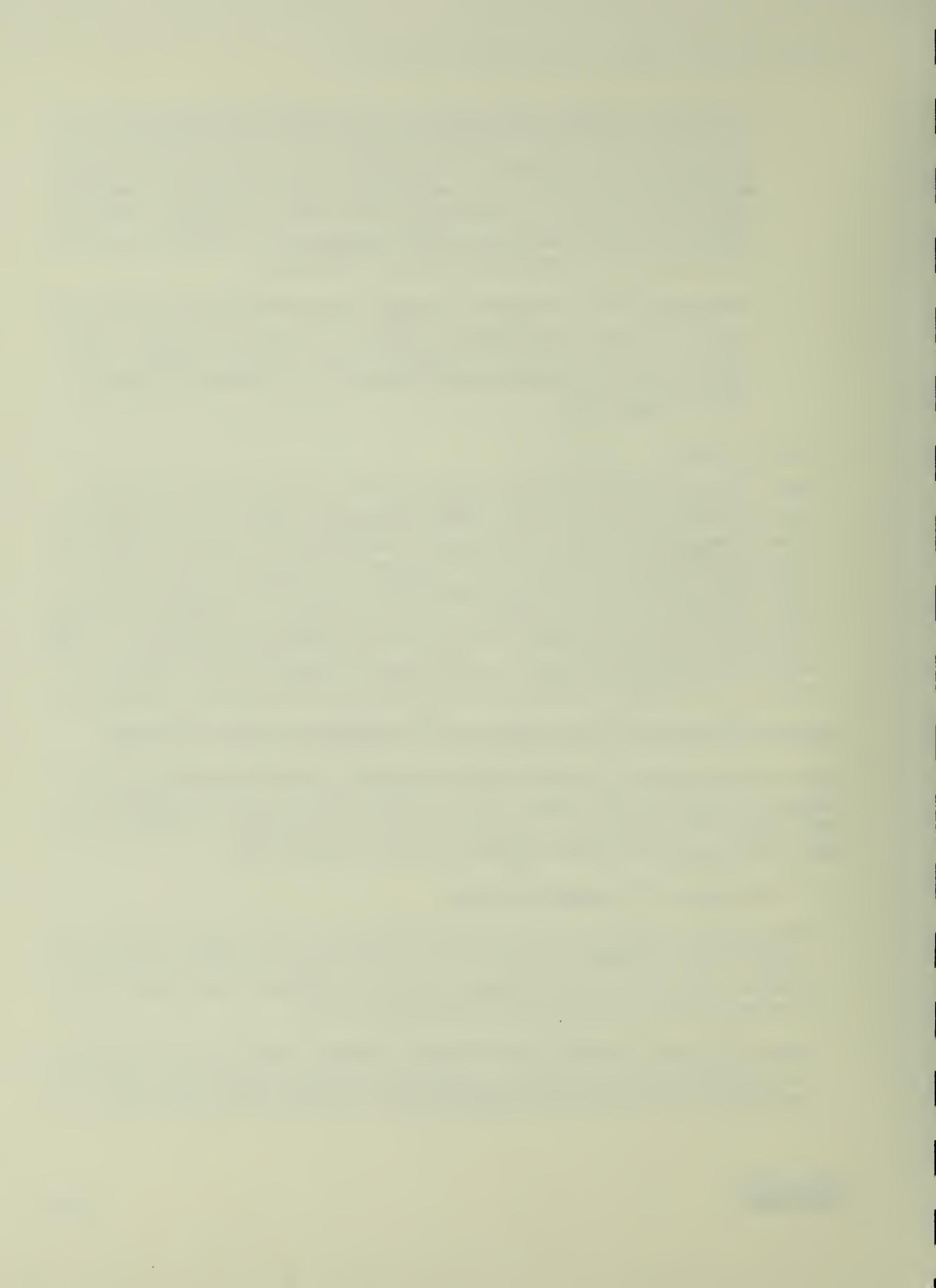
5 RATIONALE AND INTENDED METHODS OF VEGETATION MANAGEMENT

Prior to implementation of the VMP, MBTA will assess the ROW evaluating the various management techniques available. Areas to be managed by chemical means will receive herbicides selected for their ability to control the undesirable vegetation. Herbicides will be chosen from those registered for use in sensitive areas.

5.1 Techniques Of Vegetation Control

Management of vegetation in yards and areas adjacent to the ballast area will utilize chemical and mechanical methods and/or be a secondary benefit of maintenance activities. Vegetation within the ballast area will be controlled by chemical methods or result from the performance of maintenance activities.

Federal and state regulations require that the roadbed must be clear of all vegetation, this including the root system. Mechanical and secondary effects often are not cost effective. Replacing of the ballasted areas is costly and time consuming.



However, ballast replacement will be the method of vegetation control when it is part of a normal maintenance schedule and will return positive results. Mowing, or hand weeding is impractical, time consuming and often will not remove the entire plant. Consequently, the only feasible method for yearly eradication of vegetation within the roadbed is through the application of herbicides.

Herbicide selection will be dependant upon timing, target vegetation, and location of the target area in regards to sensitive areas. These issues will be addressed in each yearly YOP. Herbicides will not be applied to portions of the roadbed where no vegetation is found, except for the application of pre-emergent herbicides (Article 5.3.2). Adjuvants and anti-drift additives will be added to the herbicide mix. These additives will minimize the possibility of excessive drift and immobilize the herbicides once they are applied. All herbicides selected will be approved by the Department of Food and Agriculture for use in sensitive areas.

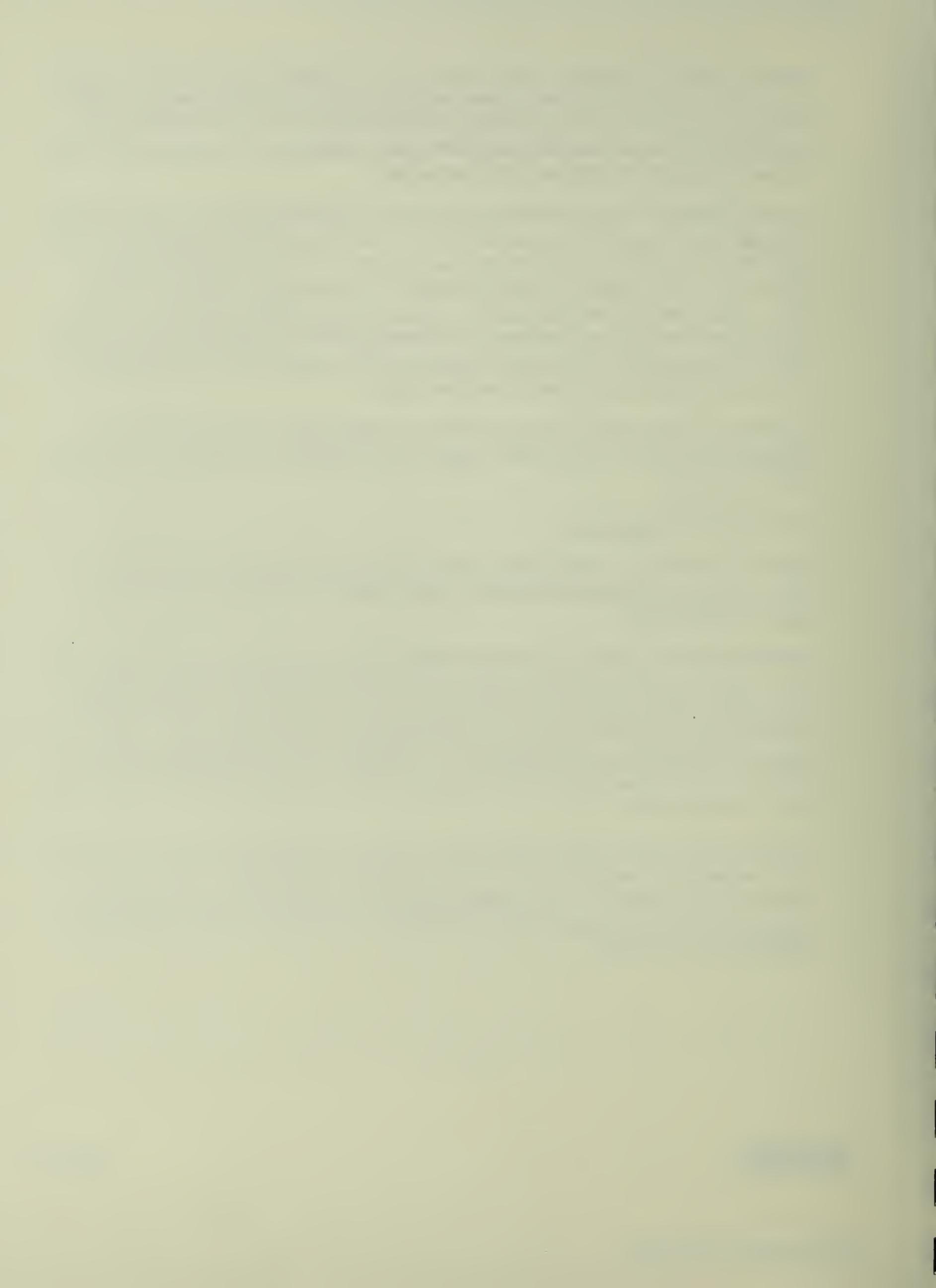
Vegetation management in all areas will be in conformance to the Rights of Way Regulations (333 CMR 11.00), local bylaws and the Wetlands Protection Regulations (310 CMR 10.00).

5.2 Mechanical Equipment

Mechanical methods of vegetation control may occur throughout the ROW and yards. Typically, mechanical methods will be utilized in conjunction with selective chemical applications.

Mechanical control techniques are often performed with power mowing equipment that is mounted on an off-track, on-track or hi-rail vehicle. Mechanical mowing and brush cutting often requires large, noisy equipment and its use is restricted within developed and recreational areas. These high power cutters also pose a high risk of danger to the personnel operating them. Operation of mechanical equipment will only occur by qualified personnel. Cutting may also be performed using chainsaws, axes, and other tools.

Maintaining the entire ROW in this manner would be costly and ineffective in the control of vegetation, therefore, it will be implemented in select areas. The control of mature woody species by cutting often results in the development of sprouts from the stump. This may require additional mechanical treatment or a stump or basal application of herbicides.



5.3 Methods Of Herbicide Application And Equipment

5.3.1 Hi-Rail Equipment

A Hi-rail vehicle will be used for the majority of the herbicide applications. Hi-rail vehicles are equipped with roller wheels which allow placement and movement of the vehicle on the rail. Use of this vehicle permits for the herbicide applicator to reach all areas of the ballast easily and effectively. Additionally, it eliminates the need for herbicide transport over rough terrain thus reducing the risk of spills.

The Hi-rail vehicle utilized for herbicide application consists of a holding tank, pump, and booms equipped with low pressure spray nozzles. The boom is mounted approximately 18 inches above the roadbed and is equipped with a drip pan to collect any herbicides that may drip from the nozzles when spraying is terminated. The spray boom nozzles are controlled by multiple switches within the cab of the vehicle, permitting the applicator to limit herbicide discharge of herbicides to those areas of the surface that require treatment. The maximum width of the spray boom is variable averaging 18 feet. Often, these vehicles are equipped with drag hoses permitting application of herbicide in remote areas.

5.3.2 Pre-emergent Application

Application of pre-emergent herbicides may occur where chemical application has been proposed (Article 4) and will be applied via low pressure (<60 PSI). In areas proposed for pre-emergent herbicide applications, only those areas which have been documented as containing weed infestation will receive treatment. Vegetation surveys will be conducted during the summer or fall prior to the proposed pre-emergent application of herbicides in order to document areas of weed infestation, species composition and relative densities and to select an appropriate herbicide. Only herbicides which have been developed for pre-emergent application and registered by or recommended for use in sensitive areas by the Department of Food and Agriculture will be applied. Pre-emergent applications will be made when climatic conditions favor their application (when no precipitation is expected for a couple of days and the area is free of snow and water). Generally, pre-emergent applications occur in the month of April and the first half of May.

5.3.3 Foliar Application

Foliar herbicide applications will be performed using low pressure spray (<60 PSI). Foliar applications may be made in areas previously mentioned to receive chemical treatment (Article 4). The majority of foliar applications will occur in the ballast area. Proper application allows complete and accurate coverage of target

vegetation. Foliar application may also be used for side trimming of tree branches without eliminating the entire tree. Herbicide application for the purpose of side trimming will not occur in any sensitive or inhabited area, on mature tree limbs or any vegetation above 12 feet. Side trimming will only occur when the Superintendent of Equipment, Yards and Services and/or the Herbicide contractor deem this method to be most appropriate for control of vegetation. Foliar applications will begin no earlier than mid-May and are weather and target species dependant.

5.3.4 Stump or Basal Treatments

Stump treatments (herbicide application) may occur in areas proposed for chemical application. Stump treatments prevent sprouting which occurs subsequent to the cutting of woody species. Treatments will be performed by applying the herbicide with a low pressure spray bottle or painting it on with a brush. Additionally, stem and basal herbicide treatments may also occur in these areas. Only selective herbicides (those that will not effect desirable vegetation) will be used. These applications will only occur when the Superintendent of Equipment, Yards and Services and/or the Herbicide contractor deem it the most appropriate method of control.

5.3.5 Touch-up Applications

Touch-up herbicide applications may be necessary pending the results of a post application survey of the ROW. Applications will only be directed to densely vegetated areas and will be performed as selective foliar or stem applications. Touch-up application will conform with 333 CMR 11.03(8).

5.4 Vegetation Control As A Secondary Benefit

Vegetation control may be achieved as a secondary benefit of certain maintenance activities. The replacement of rails, ties, ballast, switch gear, and the scouring of drainage ditches remove some or all of the targeted vegetation in a given area. Each of these activities will decrease the potential spread of undesirable vegetation from seeds and shoots. When maintenance is scheduled and will result in the control of undesirable vegetation (as previously discussed in Article 4), no herbicide will be applied to the area.

6 METHODS FOR THE IDENTIFICATION OF SENSITIVE AREAS AND PROPOSED CONTROL STRATEGIES

6.1 Sensitive Area Definitions And Associated Restrictions

Massachusetts Pesticide Board Regulations, 333 CMR 11.00, defines sensitive areas as "... any area within the right-of-way, including but not limited to the following, in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects:

- (a) within the primary recharge area of a public drinking water supply well;
- (b) within 400 feet of any surface water used as a public water supply;
- (c) within 100 feet of any identified private drinking water supply well;
- (d) within 100 feet of any standing or flowing water;
- (e) within 100 feet of any wetland;
- (f) within 100 feet of any agricultural or inhabited area."

The sensitive areas "not readily identifiable in the field" will be identified and clearly and permanently marked in the field. These include areas (a) through (e) mentioned above. Agricultural and inhabited areas are generally easily identified from the ROW. Agricultural areas refer to, but are not limited to, actively cultivated gardens, greenhouses, orchards, fields, pastures, and other areas where herbicides might impact adversely on the vegetation under cultivation or agricultural management. Inhabited areas refer to but are not limited to residences, schools, hospitals, parks and recreational facilities or other areas in which humans generally live, work or gather.

No herbicide will be applied within; 400 feet of any public ground water supply well, 100 feet of any surface water used as a public water supply or 50 feet of any private drinking water supply identified in accordance with 333 CMR 11.04(2)(c)(3). Herbicides may be applied within; the primary recharge area, between 100 and 400 feet of any surface water used as a public water supply and between 50 and 100 feet of any private drinking water supply identified in accordance with 333 CMR 11.04(2)(c)(3) if a minimum of 24 months has elapsed since the last application and they are applied selectively by low pressure foliar techniques or stem application.

Herbicides will not be applied within 10 feet of any standing or flowing surface water which is not a public water supply or wetland. Herbicide may be applied between 10 and 100 feet of any standing or flowing surface water which is not a public water

supply or wetland if a minimum of 12 months has elapsed since the last application and the herbicides are applied selectively by low pressure foliar techniques or stem application.

Application of herbicides within 100 feet of an inhabited or agricultural area during the growing season will occur only if a minimum of 12 months has elapsed since the last application and the herbicides are applied selectively by low pressure foliar techniques or stem application.

6.2 Identification And Delineations Of Sensitive Areas

Any maps and plans locating sensitive areas will be of such a scale and accuracy as to provide sufficient detail to allow these areas to be delineated or will show bench marks or other permanent structures located on the right-of-way which allow the delineation of sensitive areas.

6.2.1 Sensitive Areas Readily Identifiable In The Field

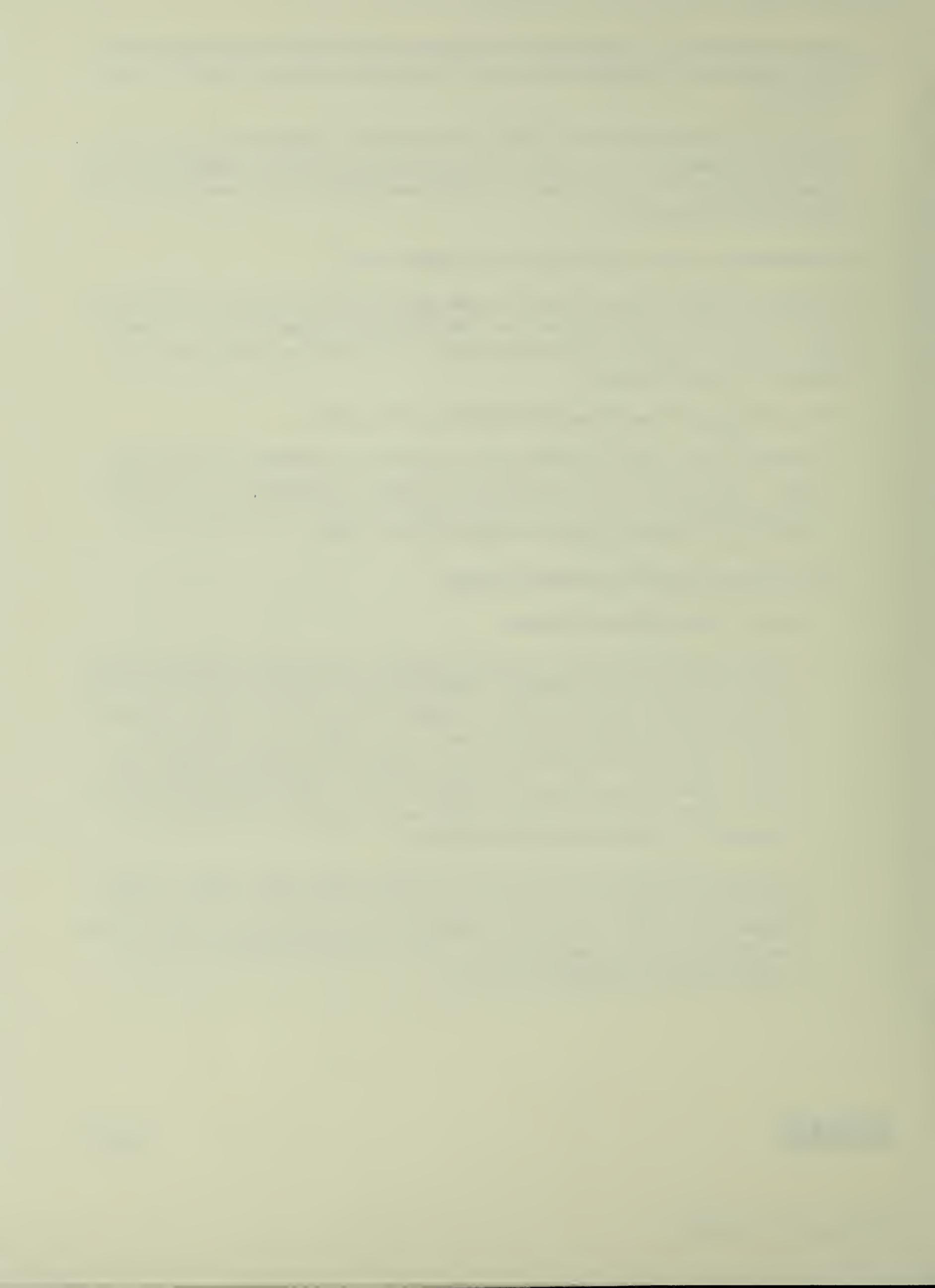
Sensitive areas readily identifiable in the field include inhabited and agricultural areas. These areas will not be depicted on maps of sensitive areas. During herbicide application, a spotter will notify the applicator prior to the spray vehicle reaching any sensitive area of the upcoming restrictions.

6.2.2 Public And Private Water Supplies

6.2.2.1 Public Water Supplies

Public water supplies may be easily located throughout the use of Groundwater Protection Overlays available at the Massachusetts Department of Environmental Protection regional offices. Aquifer recharge zones (Primary) may be identified from aquifer protection zone maps available from local regional offices. If the boundaries of the Primary Recharge Area has not been delineated, it shall be considered to be the area within 1/2 mile radius of the public well. The Local Boards of health and/or water departments may also have information regarding public water supplies.

Any restricted zones associated with a public surface water supply or public ground water supply well, which pass through the ROW will be indicated on sensitive area maps. Additionally, these boundaries will be located in the field and the appropriate restricted zones will be marked on the ROW using the marking scheme detailed in Article 7.0.



6.2.2.2 Private Water Supply Wells

MBTA shall consult with the Department of Food and Agriculture to obtain the locations of any private wells located within 100 feet of the rights-of-way. This research will be conducted annually during the preparation of the Yearly Operating Plan. Records of this research will be kept on file with the MBTA or it's Environmental Contractor. Signs shall be posted at visible points along the ROW to indicate to the herbicide applicator, the location of the well in relation to the ROW. These wells and appropriate restrictions will be marked on sensitive area maps and the ROW.

6.2.3 Wetlands And Surface Waters Which Are Not Public Water Supplies

The Rights of Way Regulations, 333 CMR 11.00, refer to wetlands as those areas subject to protection under MGL c. 131, s. 40 which include the areas as defined in 310 CMR 10.02(1)(a)-(c). These areas are:

- | | | |
|--|-----------------|---|
| (a) Any bank,
any freshwater wetland,
any coastal wetland,
any beach,
any dune,
any flat,
any marsh,
or any swamp | bordering
on | the ocean
any estuary
any creek
any river
any stream
any pond
or any lake |
| (b) Land under any of the waterbodies mentioned above | | |
| (c) Land subject to tidal action | | |

Surface waters which are not public water supplies and wetlands shall be identified using maps and field verification. This research shall be done annually and records of this research will be kept on file with the MBTA or it's Environmental Contractor. These sources may include but not be limited to:

- U.S. Geological Survey, Topographic Maps
- U.S. Soil Conservation Service, Soil Survey Maps
- U.S. Fish and Wildlife Service, Wetland Inventory Maps
- McConnell Land-Use Maps, University of Massachusetts, Amherst, Department of Forestry and Wildlife Management

Each wetland and surface water within 100 feet of the ROW will be field verified and identified by an experienced wetland scientist, ecologist or other competent professional. The wetland boundaries shall be the line at which 50 percent or more of the plant community consists of wetland plant species as identified in the Wetlands Protection Act, MGL Chapter 131 Section 40., or as stated in the National List of Plant Species That Occur in Wetlands; 1988 Massachusetts, U.S. Fish and Wildlife Service, or local bylaw.

The wetland and surface water boundaries shall be formally verified through a Request For a Determination Of Applicability from the appropriate communities as set forth in 310 CMR 10.00. The sensitive areas determined in the field will be marked via the system described in Article 7.0..

6.2.4 Endangered or Threatened Species

The Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species (NHES) Maps will be consulted in the preparation of MBTA's YOPs. Any areas of the NHES maps depicting the presence of the endangered or threatened species within the MBTA's Rapid Transit System ROW will be marked on the sensitive area maps. In such a case, the MBTA and/or their representative will contact the NHES Program for recommendations to minimize impacts to such species.

7 MARKING SYSTEM USED TO IDENTIFY SENSITIVE AREAS

A color coded system will be implemented to demarcate sensitive area restrictions throughout the MBTA's ROWs. Subsequent to the proposed methods and techniques of herbicide application, markings will be placed in each Ballasted Area and each Area Adjacent to the Ballast where sensitive area boundaries pass, prior to any herbicide application within that area. The Ballasted Area and Area Adjacent to the Ballast will be marked independently as will each Ballasted Area in situations where more than one rail line are present.

Ballasted area markers will include 4" by 4" painted aluminum plates and paint. Plates will be attached to the center of the tie which is located just outside of a boundary. Correspondingly, appropriately colored paint will be placed on the outer ends of two ties just outside of the boundary.

Areas adjacent to the ballast will be marked with tags or paint. These markers will be located on either existing communication/power supply poles or on posts to be installed at the time of demarcation. Areas Adjacent to the Ballast will only be marked should a particular YOP propose herbicide applications in this area. Generally, herbicide applications will not be proposed in this area.



Each boundary marker shall have next to it the adjoining boundary's marker (i.e. a no spray boundary marker will have a limited spray boundary marker placed next to it). Marker colors include:

- | | |
|----------|--|
| White = | Unrestricted spray zone. |
| Blue = | Limited spray zone; Wetlands, Surface Waters, and Public Surface Water Supply. |
| Red = | Limited spray zone; Public Groundwater Aquifer Recharge Area. |
| Yellow = | No spray zone. |

Graphics depicting the general method of markings are included in Appendix 1.

8 OPERATIONAL GUIDELINES FOR HERBICIDE APPLICATORS

8.1 Licensing Requirements Of Applicators

No herbicide application or supervision of herbicide application shall be performed by any person unless they are certified by the Department of Food and Agriculture in the category of Rights-of-Way Pest Control, pursuant to Massachusetts Pesticide Board Regulations, 333 CMR 11.00.

8.2 Site Review & Record Keeping

Prior to implementing an herbicide application program the Superintendent of Engineering, Yards, and Services shall be responsible for supervising a survey of the ROW. The purpose of this survey is to ascertain the necessity for an herbicide application and to identify the location and species composition of vegetative encroachment. Records regarding this survey shall be maintained by MBTA and/or their Environmental Contractor and may be used in the future preparation of YOPs. Forms to be used will include but not be limited to:

- Name of person conducting the survey
- Date, time, municipality in which the survey is being performed, and the mile post or marker in which the vegetation problem occurs
- A description of the vegetation (relative density and species type; woody vs. herbaceous)
- A section for general remarks

The herbicide applicator shall maintain a field report for each day of herbicide application. This log shall contain the date of treatment, weather conditions, equipment, herbicides, adjuvants, and carriers used, quantities of chemicals used, persons present during application and start and stop times of the herbicide treatment. The applicator will maintain a daily spray log. The spray log shall include the identification of the ROW sections receiving treatment (mile post or other landmarks), the quantity and type of herbicide used and a remarks section.

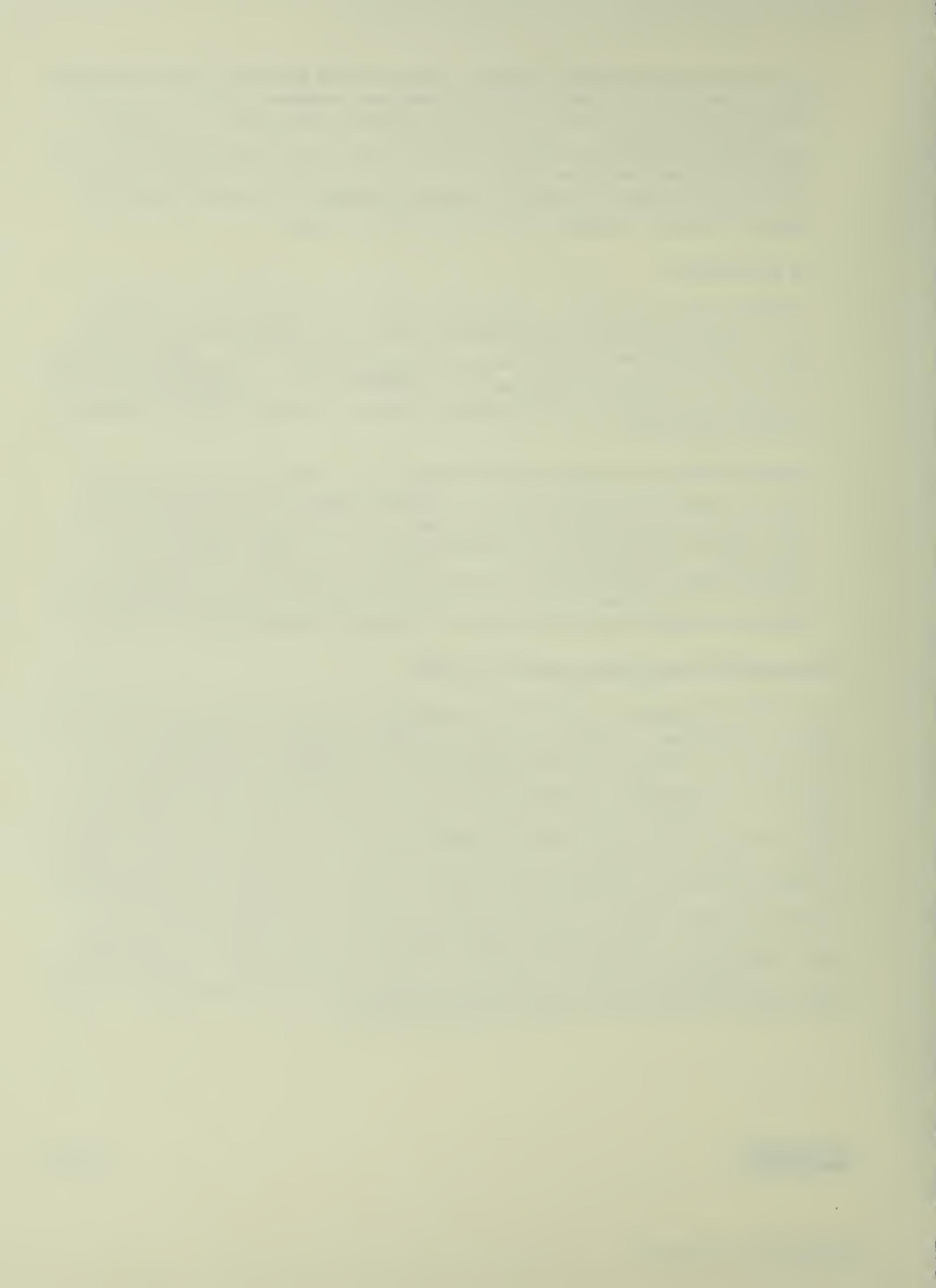
8.3 Compliance

The MBTA will comply with all notifications and regulations set forth in 333 CMR 11.00. Herbicide applicators will conform to any and all applicable rules and regulations set forth by any federal, state and municipal bylaws. The applicators and any associated consultants or employees of the MBTA shall be thoroughly familiar with this VMP and the applicable YOP and have with them a copy of these at all times of herbicide application.

Water for mixing of herbicides will be obtained in accordance to local ordinances and only obtained from lakes ponds or streams if hoses are equipped with anti-syphon devices approved by the Department of Environmental Protection. Handling, mixing or loading of any herbicide shall not occur within 100 feet of any sensitive area. Herbicide concentrate shall only be added when the equipment is located on a nonporous surface, minimizing the impacts of any accidental spills. All herbicides, adjuvants and carriers shall be handled in conformance to their labels.

9 EMERGENCY AND CONTINGENCY PLANS

The herbicide application contractor will have an emergency contingency plan which the applicator can follow in the event of a spill or related emergency. The applicator must be equipped at all times during the preparation and application of herbicides for the purpose of this vegetation management plan, to carry out this contingency plan. The applicator must at all times have with them a shovel, broom, heavy duty plastic bags or other leak proof container(s), activated charcoal, absorptive clay, and a suction system equipped with a hose adequate for picking up liquids. In the case of a spill the applicator shall take all measures possible to contain it. This may include but not be limited to the use of absorptive clay or other absorptive materials, and the building of dikes or containment berms. The applicator must insure that the area remains protected until further cleanup may be initiated. In a timely manner, the applicator or representative must contact federal, state or local agencies associated with hazardous spills. The YOP shall include a complete list of these applicable agencies.



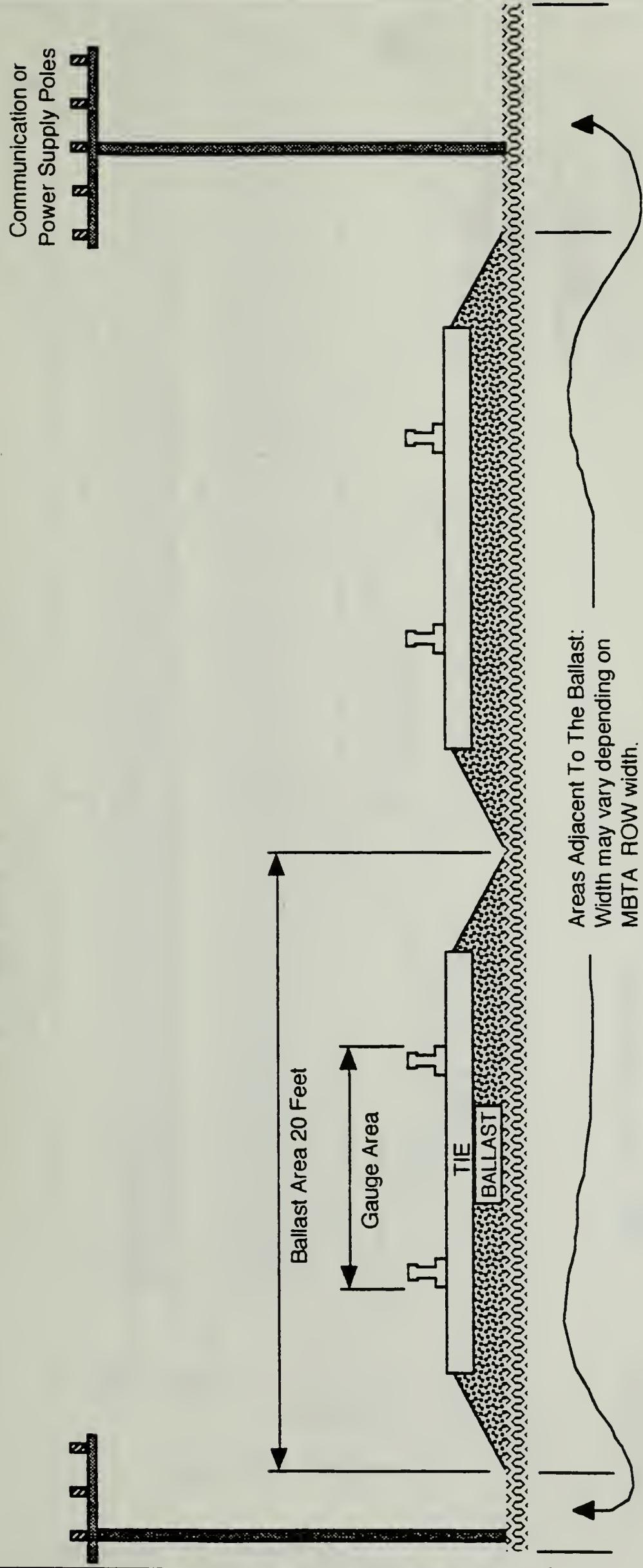
10 ALTERNATIVE LAND USE

The MBTA is open to alternative land use recommendations from state, local or private citizens. Such recommendations may regard other management techniques for the control of undesirable vegetation. All requests will be reviewed on a case by case basis and must show that the existing vegetative conditions in the area of question would not significantly interfere with MBTA's operation of the Rapid Transit System or present a safety hazard to the employees of the MBTA and that the current vegetation control methods will endanger or jeopardize the public's or concerned party's well being. All correspondence must be addressed to:

Paul Pellegrini
Superintendent of Equipment, Yards, and Services
36 Arlington Ave
Charlestown, Massachusetts 02129
(617) 722-5366

11 APPENDIX A:

**Figures Regarding Proposed
Marking System**



ELITO ENVIRONMENTAL CONSULTANTS

 100 Corporate Place, Suite 103
 Peabody, MA 01960
 (508) 535-7861

MBTA RAPID TRANSIT SYSTEM

Boston, Massachusetts

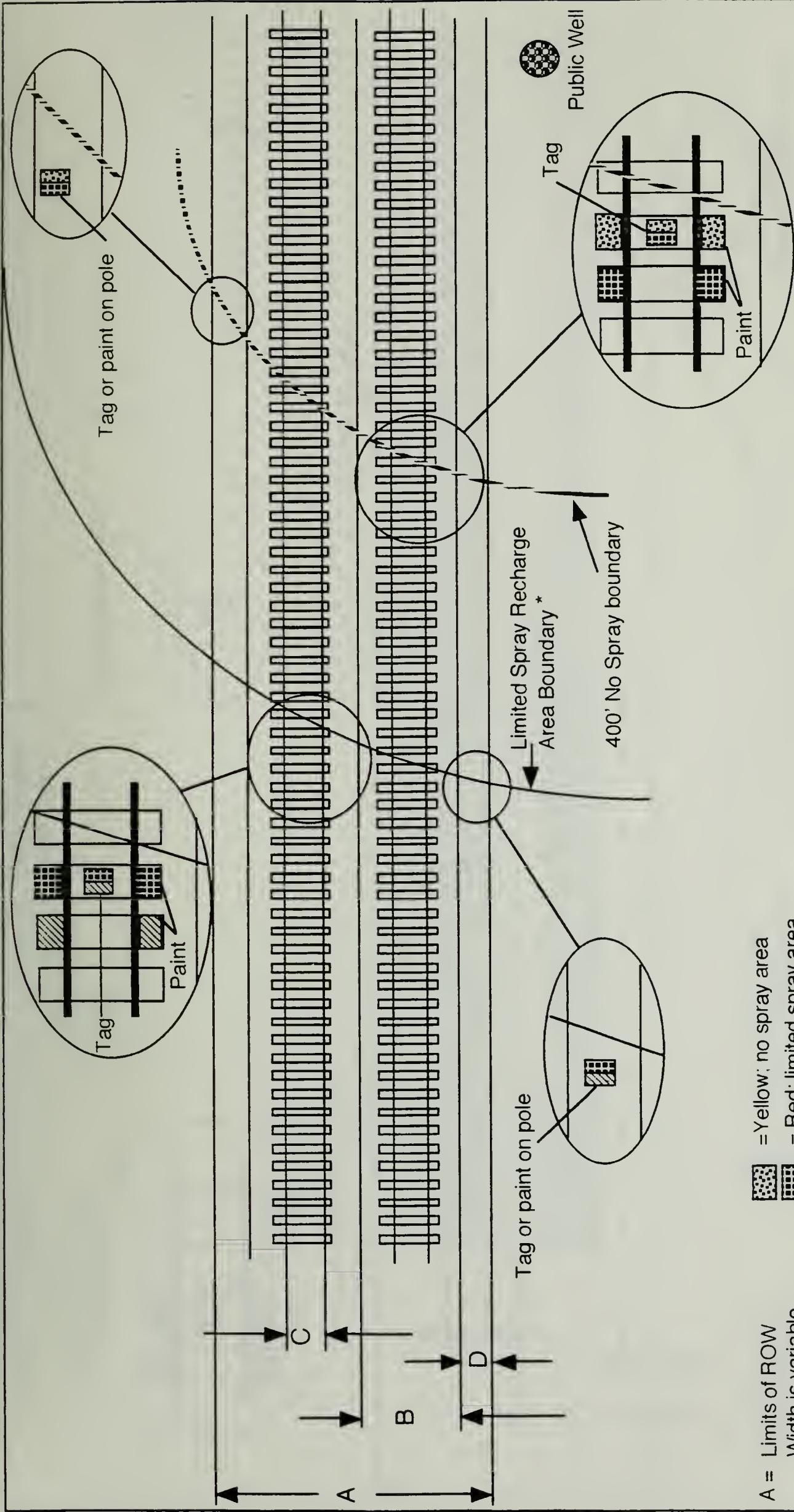
LEC Job # 1837.01

**Typical Cross-section of
MBTA ROW**

Not to scale

August 1993

FIGURE # 1



A =	Limits of ROW
	Width is variable
B =	Ballasted Area 2
C =	Gauge Area
D =	Area Adjacent to Width is depend ROW width

= Yellow; no spray area
 = Red; limited spray area
 = White; unrestricted spray area

Appropriate markers will be placed at each location a boundary crosses a portion of the ROW

* 1/2 mile radius from well
or as delineated by
municipality

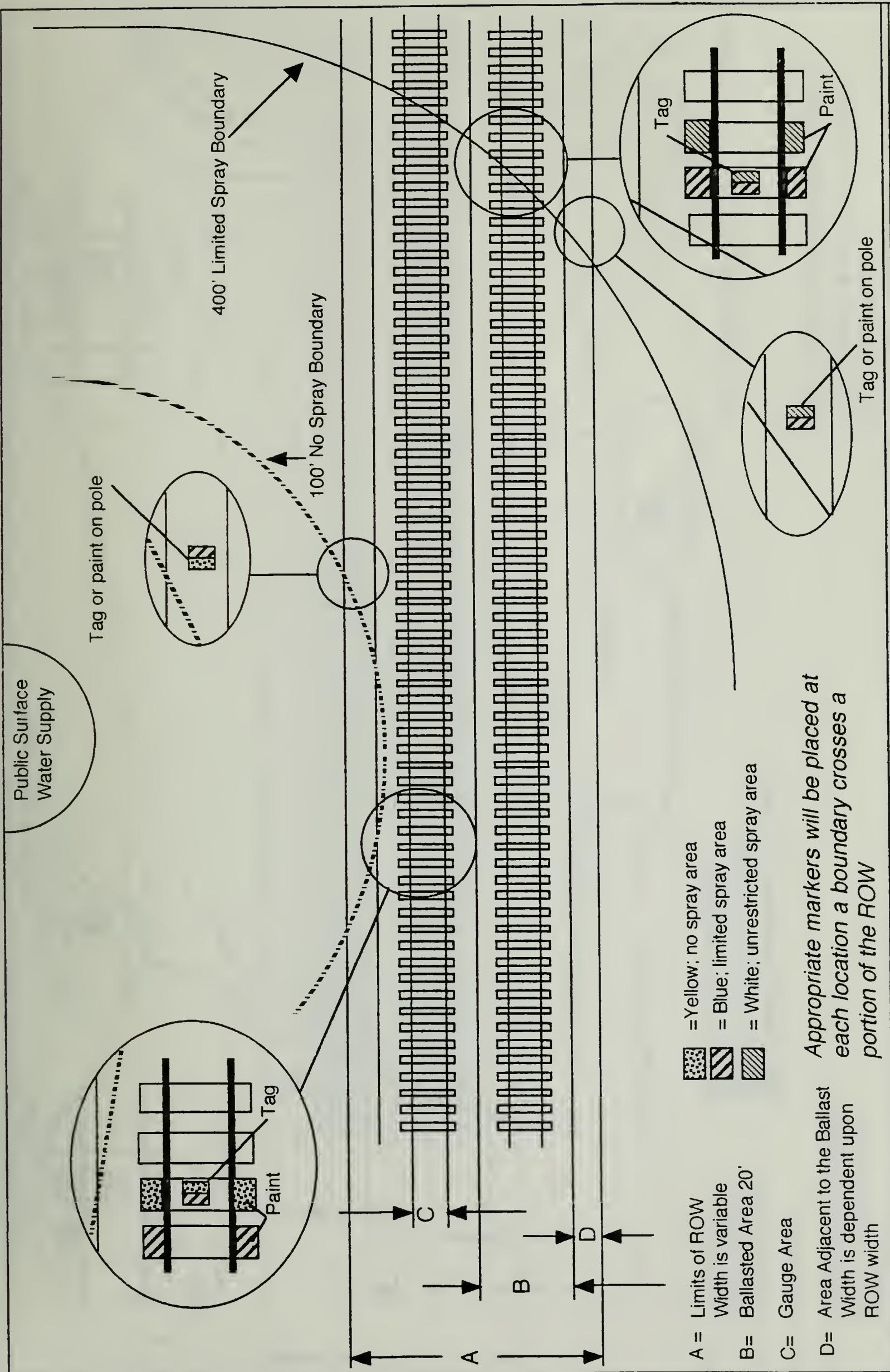
MBTA RAPID TRANSIT SYSTEM

100 Corporate Place, Suite 103
Peabody, MA 01960

Sensitive Area Markings: Public Groundwater Well

Not to scale
August 1993

FIGURE #2



LELITO ENVIRONMENTAL CONSULTANTS

100 Corporate Place, Suite 103
Peabody, MA 01960
~~(978) 535-7221~~

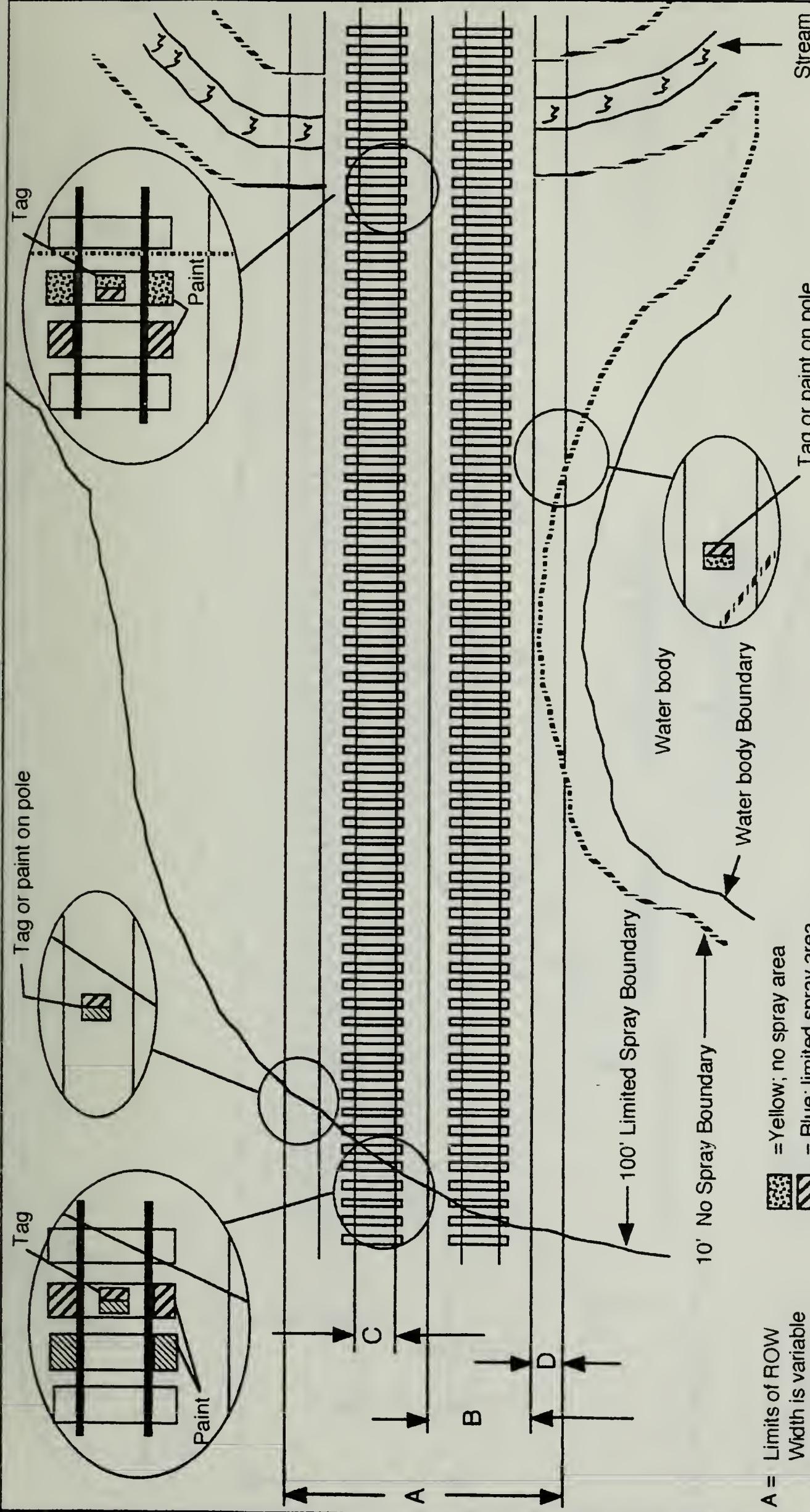
MBTA RAPID TRANSIT SYSTEM

Boston, Massachusetts

EC Job #1837.01

Sensitive Area Markings: Public Surface Water Supply

FIGURE #3
Not to scale
August 1993



Appropriate markers will be placed at each location a boundary crosses a portion of the ROW

MBTA RAPID TRANSIT SYSTEM

Boston, Massachusetts

LEC Job #1837.01

LELITO ENVIRONMENTAL CONSULTANTS

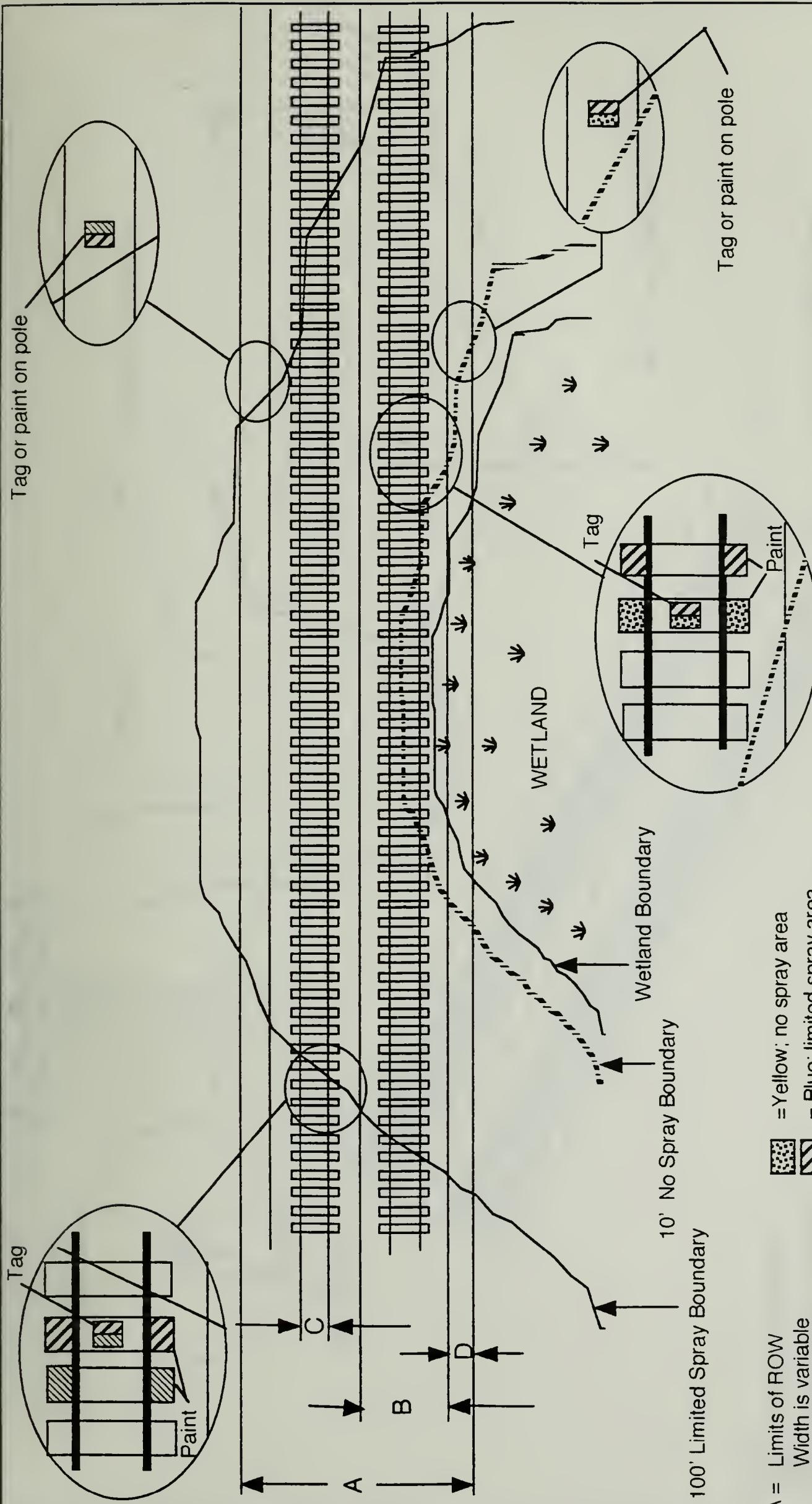
100 Corporate Place, Suite 103
Peabody, MA 01960
(508) 535-7861



**sensitive Area Markings:
Streams & Water bodies**

Not to scale
August 1993

FIGURE #4



A =	Limits of ROW	D =	Area Adjacent to Width is depend
	Width is variable		ROW width
B =	Ballasted Area 2	C =	Gauge Area

- = Yellow; no spray area
- = Blue; limited spray area
- = White; unrestricted spray area

Appropriate markers will be placed at each location a boundary crosses a portion of the ROW

LELITO ENVIRONMENTAL CONSULTANTS

100 Corporate Place, Suite 103
Peabody, MA 01960
(508) 535-7861

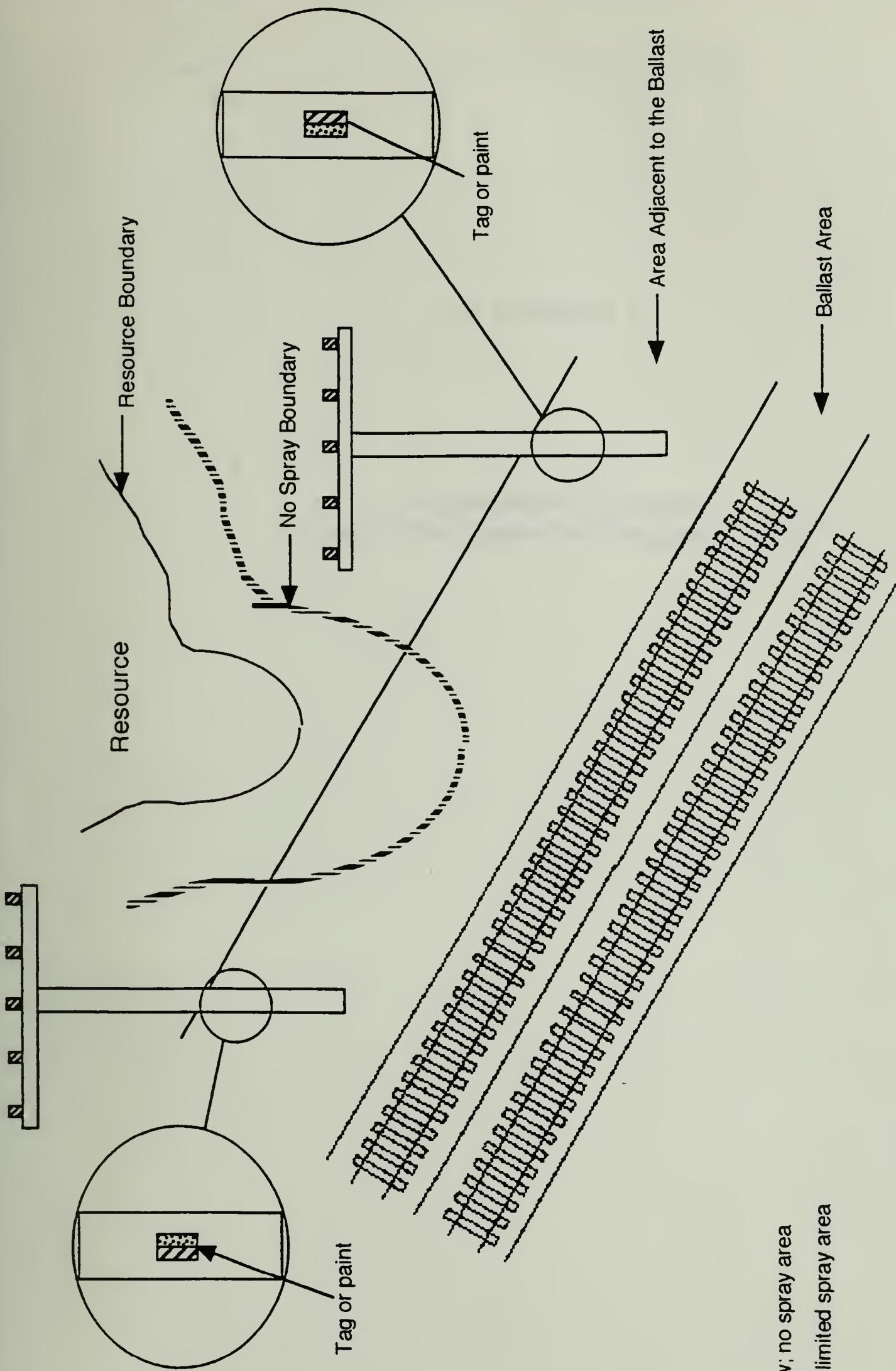


MBTA RAPID TRANSIT SYSTEM

Boston, Massachusetts

LEC Job #1837.01

FIGURE #5
August 1993
Not to scale



= Yellow; no spray area
 = Blue; limited spray area

Appropriate markers will be placed at each location a boundary crosses a portion of the ROW

LELITO ENVIRONMENTAL CONSULTANTS

 100 Corporate Place, Suite 103
 Peabody, MA 01960
 (508) 535-7861

MBTA RAPID TRANSIT SYSTEM
 Boston, Massachusetts

LEC Job #1837.01

Sensitive Area Markings:
Areas Adjacent to the Ballast

Not to scale
August 1993

FIGURE #6

12 APPENDIX B:

**Qualifications Of Persons
Preparing The Vegetation Management Plan**



STATEMENT OF QUALIFICATIONS

LEC staff have considerable experience in preparing and implementing Yearly Operating Plans associated with railroad right-of-way vegetation management strategies. Specifically, LEC staff have worked at length (in excess of 3 years) with railroads in Massachusetts, including Consolidated Rail Corporation (Conrail) to develop and implement vegetation management plans consistent with Integrated Pest Management and State of Massachusetts Wetland and Pesticide regulations. Services ranged from extensive preliminary field work including wetland boundary demarcations and the placement of delineation markings, to the actual preparation and implementation of Yearly Operating Plans including supervision of spray activities.

LEC brings to this project extensive experience with utility rights of way and wetland issues. For instance, in 1990 LEC was retained by Environmental Consultants, Inc. of Southampton, Pennsylvania to assist in the implementation of the 1990 Yearly Operating Plan (YOP) brush program for Conrail in Massachusetts. An LEC scientist accompanied the herbicide applicator as the "qualified biologist" to assist in the protectable resource area identification. Herbicides were to be used only outside of all wetland buffer zones and other protectable resource areas under the 1990 YOP. Therefore, LEC's role was to indicate upland areas along the ROW thereby preventing spray discharge in protectable resource locations. This particular contract involved 160 miles of Boston-Albany Main Line ROW.

Paul R. Lelito holds a Commercial Supervisory License from the Massachusetts Department of Food and Agriculture for the Application of Pesticides and Herbicides. Consequently, LEC has a complete knowledge of herbicides acceptable for the management of vegetation along the MBTA's right-of-ways and is therefore, highly qualified to provide the MBTA with the necessary consultation and supervisory services. Furthermore, LEC has considerable experience in maintaining beneficial working relationships with state regulatory agencies yielding it highly qualified to work in conjunction with the Massachusetts State Pesticide Board throughout the entirety of this project.

In addition, LEC has also provided AT&T and U.S. Sprint with the necessary environmental services (wetland delineations and permit acquisitions) for installing fiber optic cables along railroad rights of way in Eastern Massachusetts. Finally, LEC staff have worked closely with New England Power Service Company on vegetative management techniques for utility rights of way in wetland areas.

PAUL R. LELITO
Principal Scientist

EDUCATION

University of Massachusetts, Amherst, MA (1989-present)
Graduate Studies

Cape Cod Community College, Hyannis, MA (1985)
Creative Writing, Continuing Education

University of Massachusetts, Amherst, MA (1970-1974)
Bachelor of Science, Wildlife Biology

Stockbridge School of Agriculture, Amherst, MA (1968-1970)
Associate Degree, Arboriculture and Park Administration

RELEVANT COURSE WORK

- Wildlife:** Management of Upland Wildlife, Ornithology, Wildlife Management Techniques, Mammalogy, Vertebrate Zoology, Entomology; small mammal study at Prescott Peninsula, Quabbin Reservoir, Petersham, MA; scientific expedition to Galapagos Islands to observe and study indigenous flora and fauna
- Fisheries:** Techniques of Fisheries Biology; Assisted in planning and development of under-utilized species of fish program for the Cooperative Extension Service (1979-1985)
- Botany:** New England Flora, Dendrology, Landscape Architecture I & II (Taxonomy), Plant Pathology, Herbicides, Plant Ecology
- Forestry:** Forestry and Land Management
- Geology:** Physical Geology, Soils Management
- Soils:** Soil Morphology and Mapping

CERTIFICATIONS AND AFFILIATIONS

- Member, Conservation Law Foundation of New England (1988)
Member, Massachusetts Association of Conservation Commissions (1984-Present)
Member, Audubon Society (1987-Present)
Member, Ecological Society (1985-1986)
Commercial Pesticide Applicator's License #21028 (1992-present)
Habitat Evaluation Procedure (HEP) Certification (1986)
Certificate of Basic Training for Police Officers
Barnstable County Police Academy, Barnstable, MA (1980)

PROFESSIONAL EXPERIENCE

Lelito Environmental Consultants, North Falmouth, Massachusetts
President

Wildlife ecosystem analysis, wetland delineations, preparation of environmental permit and license applications for various site development projects throughout Massachusetts, business management (1987-Present)

Excursion to the Galapagos Islands

Conducted field investigations and research with a group of 15 nationally recognized scientists for three weeks in the Galapagos Islands.

New England Tree Specialists, Inc., Falmouth, Massachusetts
President

Provide technologically balanced, environmentally sound vascular tree and plant care (1990-present)

Boston Survey Consultants, Boston, Massachusetts
Senior Environmental Planner

Development site analysis, wetland resource area delineations, permit preparation and presentation before various local Conservation Commissions (1986-1987)

Natural Resource Department, Falmouth, Massachusetts
Natural Resource Officer

Environmental law enforcement and prosecution, advisor to Conservation Commission and Engineering Department, wetland boundary determination, department administrator, representative spokesman to Town government (1980-1986)

Massachusetts Department of Environmental Protection, Boston, MA
Associate

Assisted State of Massachusetts (DEQE) in promulgating the policy guidelines addressing MGL 310 CMR 10.60, Wildlife Habitat Evaluations (effective 11-1-87)

Plympton Conservation Commission
Chairman (1983-1987)

Bristol County Cooperative Extension Service (1982)
Guest Speaker

PROJECT EXPERIENCE

Residential Subdivisions

Bretonwood Farm, Weymouth, MA

Designed and drafted a detailed wetland replication plan; identified and mitigated impacts to existing recreational land use and wildlife habitat

Satucket Village, Bridgewater, MA

Obtained necessary conservation permits to construct a 24 Lot residential subdivision; assisted in designing a subdivision plan that would preserve the environmental integrity of the existing resource areas on the locus; designed a wetland replication plan which incorporated an exhaustive study of the hydrology and floristic characteristics of the site

Industrial Subdivisions

Finnell Industrial Park, Weymouth, MA

Proposed a plan which mitigated the impacts from alterations of existing wetland resource areas, noise pollution, aesthetics, and traffic by providing a vegetated boundary screen which created a buffer between the industrial park and the abutters; designed a wetlands replication plan and wildlife assessment which discussed the potential impacts to existing wildlife resulting from the proposed project

Industrial Park, Wilmington, MA

Prepared a detailed report describing the existing resource areas and their floristic characteristics, including plant species composition, relative abundance and density; delineated the vegetated wetland boundaries on the site

New Salem Street Industrial Park, Wakefield, MA

Conducted a site assessment and evaluation including detailed measurements of the floristic and physical characteristics of the wetland resource areas proposed to be altered

Additional Projects

Tennessee Gas Pipeline

Duties included resource area descriptions and delineations, presentations at public hearings, supervision of construction, coordinated filing of Notice of Intent applications, review land survey data

Beaver Mitigation - Methuen, MA

Provided biological information regarding the habits and habitat of an existing beaver colony to enable the Methuen Conservation Commission to evaluate the impacts of nearby pipeline construction; performed research and site assessment of beaver activities and prepared written report of findings which were presented at several public hearings

Municipal Sewer System - Falmouth, MA

Compiled planting and construction schedules for alteration in wetland resource areas throughout the municipality

Shopping Malls - Shrewsbury, Berkshire, and Kingston, MA

Conducted detailed floristic evaluations; site evaluations of existing plant communities, including upland and wetland vegetation; delineation of all existing wetland resource area boundaries; prepared detailed reports describing plant species composition, topography, and soils

Hatch Harbor Dike - Provincetown, MA

Determined the boundaries of the existing wetland resource areas associated with the proposed reconstruction of the breached Hatch Harbor Dike, adjacent to the Provincetown Airport; determined boundaries of existing flood zones, coastal banks, coastal dunes, and a salt marsh; proposed to increase the flow of salt water into the inner harbor, thereby, limiting the suitable environment for the continued invasion of non-desirable freshwater plant species, principally, Phragmites sp.

Eastward Ho Golf Course - Chatham, MA

Pest management throughout golf course grounds including diagnosis of insect and disease infestation. Recommended treatment and application. Complete tree care including pruning, removal, cabling and transplanting

Lawrence Lynch, Falmouth, MA

Conducted land clearing, road widening and pruning on projects throughout Cape Cod

CHERYL C. DESHAIES
Environmental Planner

EDUCATION

University of New Hampshire, Durham, NH

Bachelor of Science in Wildlife Management (1987-1991)
Minor course of studies in Wetland Ecology

RELEVANT COURSE WORK

- Environmental Law
- Soil and Plant Relationships
- Wetland Resource Management
- Wetland Soil and Plant Field Identification
- Wildlife Habitat Management

RELATED EXPERIENCE

Lelito Environmental Consultants, Peabody, MA
Environmental Planner (October, 1989 - present)

- Delineation of protectable wetland resource areas
- Site Assessments and Wildlife Habitat Evaluations
- Preparation of Notice of Intent wetlands permit applications
- Preparation of Section 404 permit applications
- Preparation and review of Environmental Impact Reports
- Technical writing; public presentations

Federal Environmental Protection Agency
Wetland Protection Section, Boston, MA
Intern (May 1990 - September 1990)

- Wetland Regulation Enforcement/Public Outreach
- Field Investigation of Section 404 violations
- Development of Public Outreach Materials

The Loon Preservation Committee, Meredith, NH
Field Biologist (May 1989 - September 1989)

- Evaluation of wildlife habitat on Lake Winnipesaukee
- Location of nesting areas and daily investigations of breeding activities
- Collection of biological data related to nesting success/failure
- Development of local volunteer network on Lake Winnipesaukee
- Development and execution of public education seminars

PROFESSIONAL AFFILIATIONS

- Member, Association of Massachusetts Wetland Scientists
Member, The Society of Wetland Scientists
Member, Town of Chelmsford Conservation Commission
Member, National Wildlife Federation

KENNETH A. DESHAIS
Environmental Scientist

EDUCATION

University of Massachusetts, Amherst, MA
Bachelor of Science, Wildlife Management (1987)

University of Massachusetts, Amherst, MA
Bachelor of Science, Environmental Science (1992)

University of Massachusetts, Amherst, MA
Masters of Science, Soil Science (anticipated 1994)

RELATIVE COURSES

Soils	Soil Classification, Soil Morphology and Mapping, Soil Chemistry, Soil Physics, Hydric Soils
Geology	Glacial Geology, Quantitative Geomorphology, Hydrogeology, Environmental Geology
Botany/Forestry	Coastal Plant Ecology, Plant Ecology, New England Flora and Fauna, Plant Kingdom, Silviculture
Wildlife	Principles of Wildlife Management, Techniques of Wildlife management, Techniques of Fisheries Management, Wetlands Ecology and Management, Ornithology, Mammalogy

RELATED EXPERIENCES

Monson Conservation Commission

Conduct site review and evaluations; review Notices of Intent, Orders of Conditions, and Request for Determinations; participate in public hearings; negotiate memorandums of understanding.

Lelito Environmental Consultants

Characterize and document soil morphological characteristics; conduct boundary determinations utilizing the Federal method of wetland determination; conduct wildlife habitat assessments; demarcate protectable resource areas; prepare mitigation plans; oversee the implementation of Vegetation Management Plans and Yearly Operation Plans of railroad rights of way;

New England Regional Soils Monitoring Project

Administrate site selection for experimental plot location; produce detailed soil descriptions; collect soil samples; compile and interpret redox, tensiometer, soil temperature, ground water level, ground water chemistry, and vegetation data.

Metropolitan District Commission, Quabbin Reservoir,
New Salem, MA

Conduct wildlife habitat management including habitat classification mapping; control of nuisance wildlife, including beaver and deer management; conduct small mammal census and bird surveys; performed analysis of forest cutting damage.

Moosehorn National Wildlife Refuge, Calais, ME

Performed wildlife habitat management practices including restoration of broken forest structure and maintenance of migratory waterfowl impoundments; invoke capture, banding, and telemetry of woodcock; conducted rehabilitation of injured birds; supervise Youth Conservation Corps workers.

Title IV Site Evaluator Training Course

Responsible for characterizing and discussing the morphological and physical characteristics of soils and their relations to on-site sewage disposal systems.

Professional Affiliations

Member, Soil Science Society of America

Member, Massachusetts Assoc. of Conservation Commissions

Member, Association of Massachusetts Wetland Scientist

